which, as we haye seen, haye hitherto baffled the best efforts of the biologists. It is for this reason that some of these are turning to the study of animal behaviour as perhaps potentially the most fruitful for theoretical biology of all branches of biological study, while not involving them in the [£] metaphysical quagmires' of * introspective philosophy '.

All memory-functions imply retention; imply, that is to say, the persistence of some change of organization, some new detail of organization, produced during some adaptive activity : for all memory-manifestations make use in some way of some such trace. The commonest approach to the problem is to assume without hesitation that some change produced in the matter of the nervous system during any activity and persisting thereafter is the essence of all retention manifested in memory functions; the change, the new[r] detail, being of such a nature as to facilitate the recurrence of a process similar to that which effected the change. And again a very common assumption has been that this change consists always in some increased intimacy of connexions between neurones, connexions which combine them into a unitary system.

This view is a natural consequence of identifying all memory with habit. It has recently (1936) been restated by J. S. Huxley in the following terms: [f] Whatever the material basis of memory be called, there are few who would deny that it must exist: but an elementary know-ledge of physiology should make it clear that even the

simplest memory-trace must involve a very large number of nerve-cells/ Those who take this view are able to point to the estimate that the human brain contains approximately nine billion nerve-cells or neurones. And